



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/727,302	12/02/2003	Akihiro Horii	P/16-347 DIV	5903

2352 7590 03/25/2005

OSTROLENK FABER GERB & SOFFEN  
1180 AVENUE OF THE AMERICAS  
NEW YORK, NY 100368403

EXAMINER
----------

LEE, HWA S

ART UNIT	PAPER NUMBER
----------	--------------

2877

DATE MAILED: 03/25/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/727,302

Applicant(s)

HORII ET AL.

Examiner

Andrew Hwa S. Lee

Art Unit

2877

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 21 January 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-59 and 68-80 is/are pending in the application.
- 4a) Of the above claim(s) 6,9-59 and 68-80 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3 is/are rejected.
- 7) ☒ Claim(s) 4,5,7 and 8 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)               | Paper No(s)/Mail Date. _____  |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>12/2/03</u> .   | 6) <input type="checkbox"/> Other: _____                                    |

## **DETAILED ACTION**

### ***Election/Restrictions***

Applicant's election of claims 1-5, 7, and 8 in the reply filed on 1/21/05 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-5, 7, and 8 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 1, there are two clauses for "a second light path member" and it is unclear which second light path member is being referred to in the clause for the coupling unit which recites "said second light path member".

Claim 1 recites the limitation "said optical branch" in the second "a second light path member" clause and the "third light path member clause". There is insufficient antecedent basis for this limitation in the claim. It is unclear if "said optical branch" is referring to the first or second optical branch.

Claim 1 recites “mutually independent” in the “optical length variation unit” clause. It is unclear which elements are being referred to and also what characteristic “independent” is being claimed.

Claim 3 recites “these,” “incident light path”, and “emitted light path” in the last clause. It is unclear what elements are being referred to by “these”, and which paths constitute an incident light path” and which paths constitute an “emitted light path.”

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out

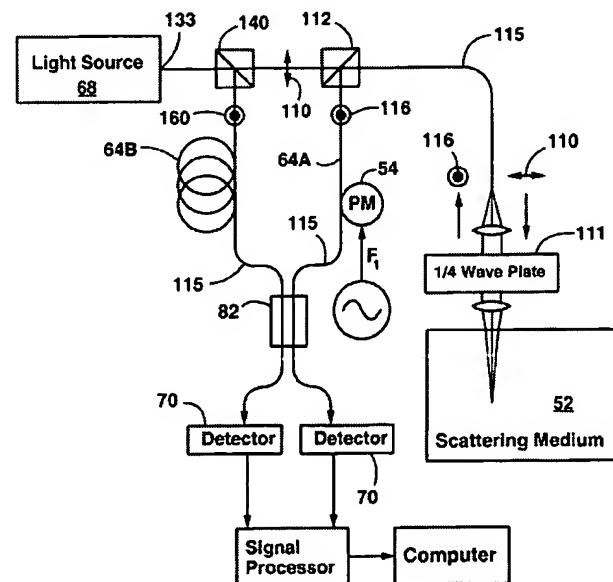
the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-3, as understood by the examiner, are rejected under 35 U.S.C. 103(a) as being unpatentable over Mandella et al ( US 6,201,608) in view of Sorin (US 5,291,267).

Madella et al show (“Mandella” hereinafter) show a method and apparatus for measuring optical reflectivity and imaging through a scattering medium comprising:

a light source (68) for supplying low coherent light so that tomographic images of an object can be constructed based on light reflected or scattered from the object to which the low coherent light is irradiated;

a light irradiating/receiving unit (Fig. 8a-c) for irradiating the low coherent light supplied from said light source to said object, and receiving the light reflected or scattered from said object, said light irradiating/receiving unit including a first optical scanning



**Fig. 15**

block-capable of scanning said object at least one-dimensionally in a direction of light reception or irradiation;

- a first light path member (lens, GRIN lens) over which the coherent light is propagated to said object and the light reflected or scattered from said object is propagated to said light irradiating/receiving unit;
- a second light path member over which the low coherent light is propagated;
- a first optical branching unit (140), interposed between light source and said first optical scanning block, for branching the low coherent light supplied from said light source into said first optical scanning block and said second light path member;
- a second optical branching unit, included in said first optical scanning block, for branching out light reflected or scattered from said object from said first optical scanning block;
- a *fourth* light path member over which the low coherent light branched by said optical branching unit is propagated;
- a third light path member over which the reflected or scattered light branched out by said second optical branching unit is propagated;
- a coupling unit (82) for coupling the low coherent light propagated over said second light path member and the reflected or scattered light propagated over said third light path member so that the low coherent light and reflected or scattered light will interfere with each other;
- a detection unit (70) for detecting the interference caused by said coupling unit to produce an interfering signal;
- an optical length-variation unit (64B, 54), coupled to one of said second and third light path members, for varying at least one of a phase delay and a group delay of light

Art Unit: 2877

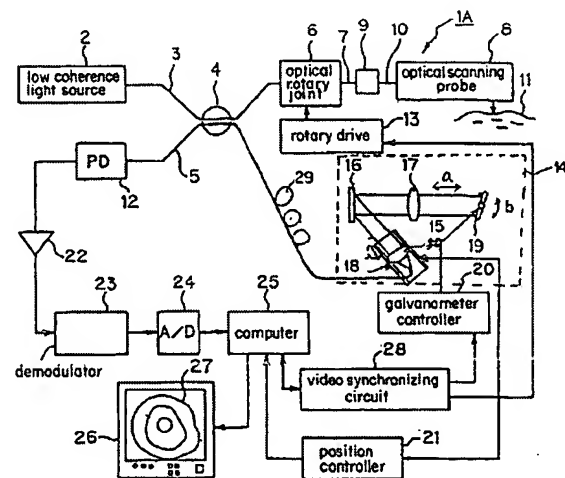
by means of an incident light path and an emitted light path, which are mutually independent, and a light-transmissive optical element interposed between the incident light path and emitted light path, so that a point of interference can be scanned in the optical-axis direction; and

an image production unit (signal processor, computer) for processing the interfering signal detected by said detection unit to produce a tomographic image of said object.

Mandella does not expressly show a phase modulator of a retroreflective type having an incident and emitted light path. Izatt et al ("Izatt" hereinafter) show optical coherence reflectometry using optical amplification comprising a retroreflective phase modulator (14).

At the time of the invention, one of ordinary skill in the art would have used the retroreflective phase modulator of Izatt in order to quickly vary the length of the light path.

FIG. 6



### *Allowable Subject Matter*

Claims 4, 5, 7, and 8 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd-paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

The prior art of record fails to show or to suggest an optical imaging device having all the elements as presently claimed in combination with the optical length variation unit having a phase modulator with a light-transmissive wedged prism rotated with a direction substantially parallel to the direction of light propagation as an axis.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew Hwa S. Lee whose telephone number is 571-272-2419. The examiner can normally be reached on Tue-Fr.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory J. Toatley Jr. can be reached on 571-272-2800 ext 77. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Andrew Hwa Lee  
Primary Examiner  
Art Unit 2877